

Geo H

1.7 Notes – Deductive Structure

Every DEDUCTIVE STRUCTURE contains:

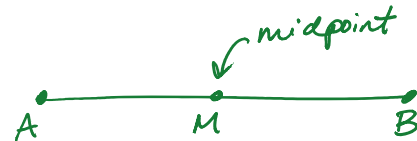
1. undefined terms
2. assumptions
3. definitions
4. theorems

Postulate – an unproved assumption

Definition – states the meaning of a term

always reversible!!

State the definition of a midpoint two different ways.



- * If a point is a midpoint, then it divides a segment into 2 \cong segments.
- * If a point divides a segment into 2 \cong segments, then it is a midpoint.

Theorem – an idea that can be proved.

Conditional Statement

The “IF” part of the statement is the hypothesis.

The “THEN” part of the statement is the conclusion.

Example

If you live in Hinsdale, then your zip code is 60521
 you live in IL
 you live in DuPage Co.

Notation

$P \rightarrow Q$ always true

Converse -

If your zip code is 60521, then you live in Hinsdale

$Q \rightarrow P$ sometimes true

If you live in DuPage Co then you live in Hinsdale

State the converse for the following conditional statements. Determine the validity for each.

- 1) If I am from Montana, then I am from the USA. Converse: If I am from the USA, then I am from Montana.
- 2) If I am a doctor, then I went to college. Converse: If I went to college, then I am a doctor.

A few more examples:

- 3) Express the definition of an acute angle as two conditional statements.
If an angle is acute, then it is greater than 0° and less than 90° .
If an angle is greater than 0° and less than 90° , then it is acute.

- 4) State the converse of the statement below and determine if it is true.

If you live in Montreal, then you live in Canada.

If you live in Canada, then you live in Montreal.

False

- 5) State the converse of the statement below and determine if it is true:

If you are a red devil athlete, then you attend Hinsdale Central.

If you attend HC, then you are a red devil athlete.



Example 6-7 State whether or not the conclusion is deducible.

Ex. 6 If a bus is a school bus, then it stops at railroad crossings. A yellow vehicle has stopped at the Hinsdale railroad crossing. Therefore, that vehicle is a school bus.

False

Ex. 7 If I have a driver's license, then I can drive a car. John has his driver's license. Therefore, John can drive a car.

True